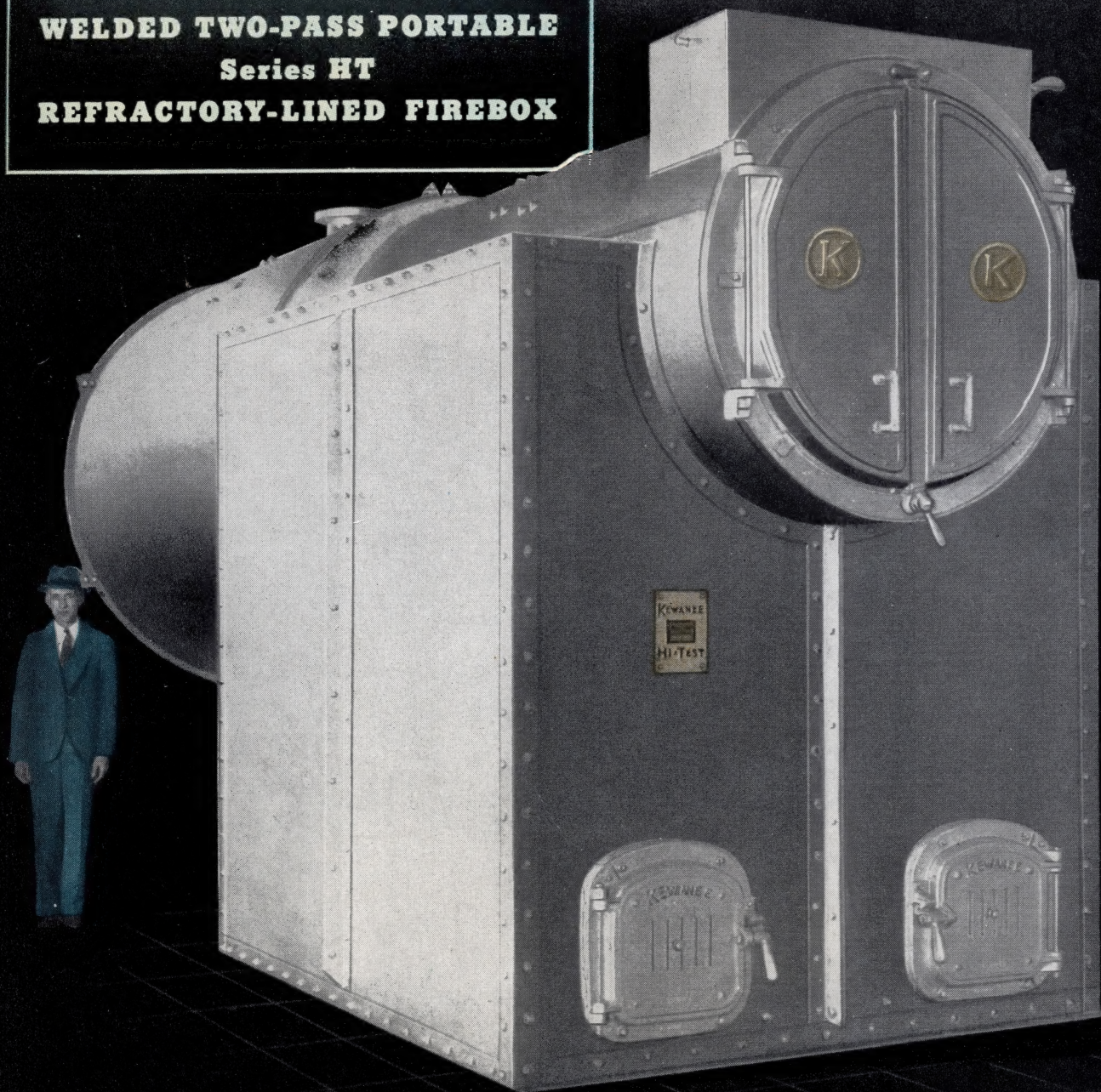


KEWANEE HI-TEST BOILER

**WELDED TWO-PASS PORTABLE
Series HT
REFRACTORY-LINED FIREBOX**



for POWER and Industry Process Steam

KEWANEE-ROSS CORPORATION

KEWANEE, ILLINOIS

CATALOG No. 89

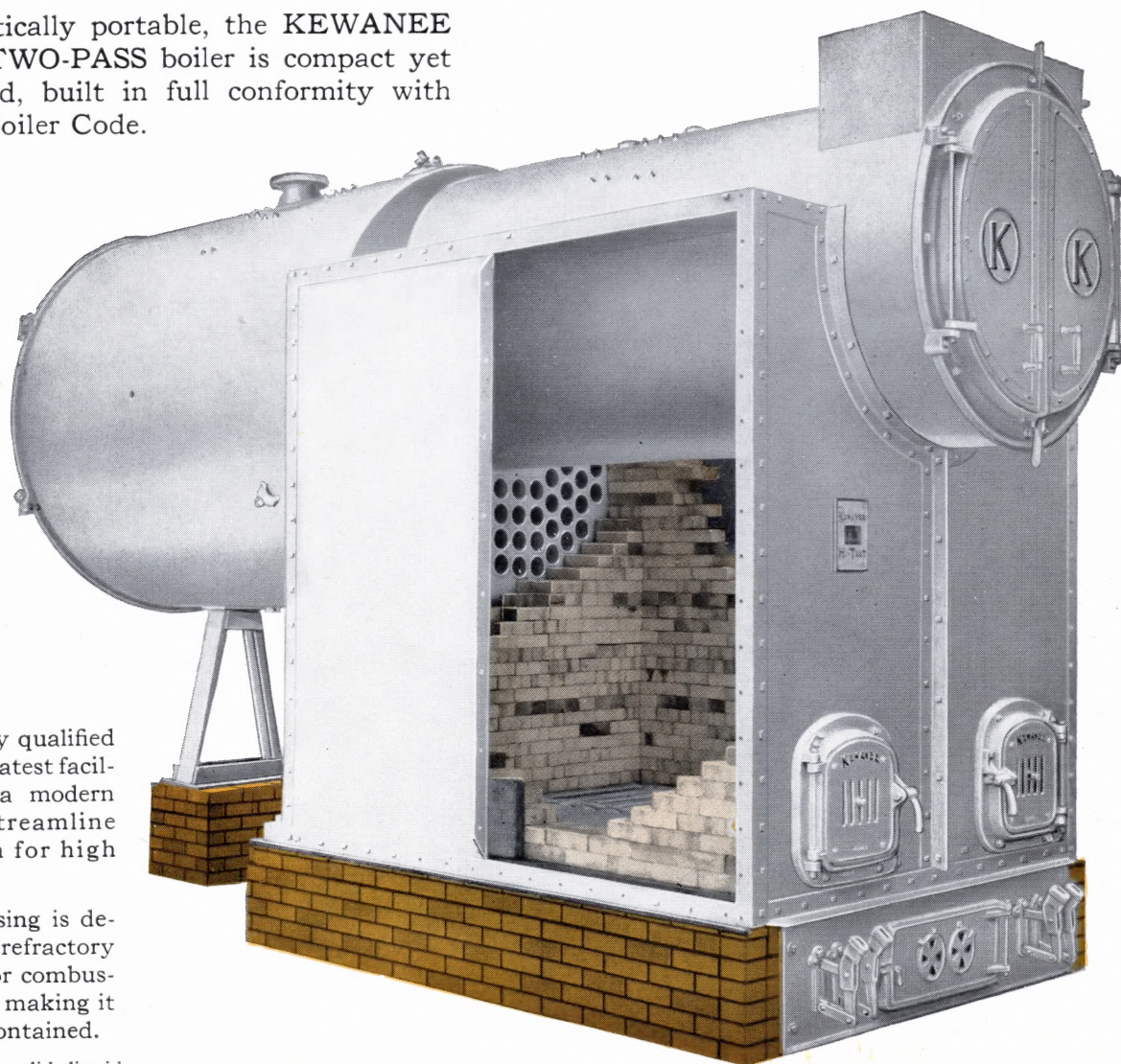
KEWANEE HI-TEST SERIES HT

Two-Pass Portable Tubular Boiler for High Pressure Steam

THE KEWANEE HI-TEST TUBULAR BOILER is now in production ready for immediate duty in any Steam usage for Power service or Industrial Process.

HT-SERIES has been newly contrived to fit modern ways and means of manufacture. It is planned with due regard for easy handling. Even when performing under critically heavy loads this fusion-welded steam generator is found highly efficient, offering continued economies in fuel year in year out.

Characteristically portable, the KEWANEE HI-TEST TWO-PASS boiler is compact yet extra rugged, built in full conformity with A.S.M.E. Boiler Code.

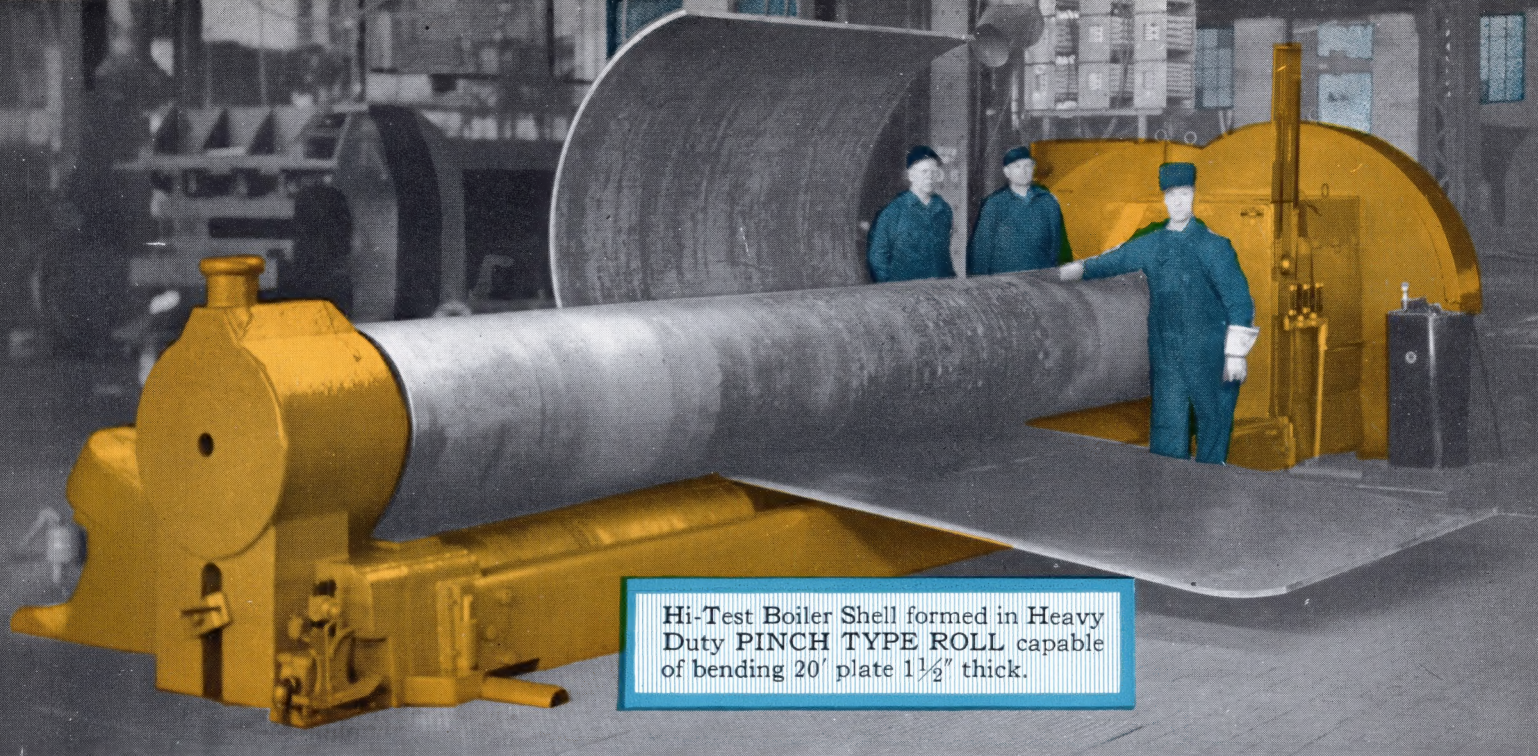


Fabrication by qualified welders using latest facilities reflects a modern practice in streamline construction for high pressure.

The metal casing is designed for a refractory lined firebox or combustion chamber, making it entirely self-contained.

All fuels whether solid, liquid or gas, hand or mechanical fired from front, side or rear may be burned with economical results wherever high pressure live steam is consumed, even if the condensate is not returned to the Boiler.

150 HP 150 LBS.



Hi-Test Boiler Shell formed in Heavy Duty PINCH TYPE ROLL capable of bending 20' plate $1\frac{1}{2}$ " thick.

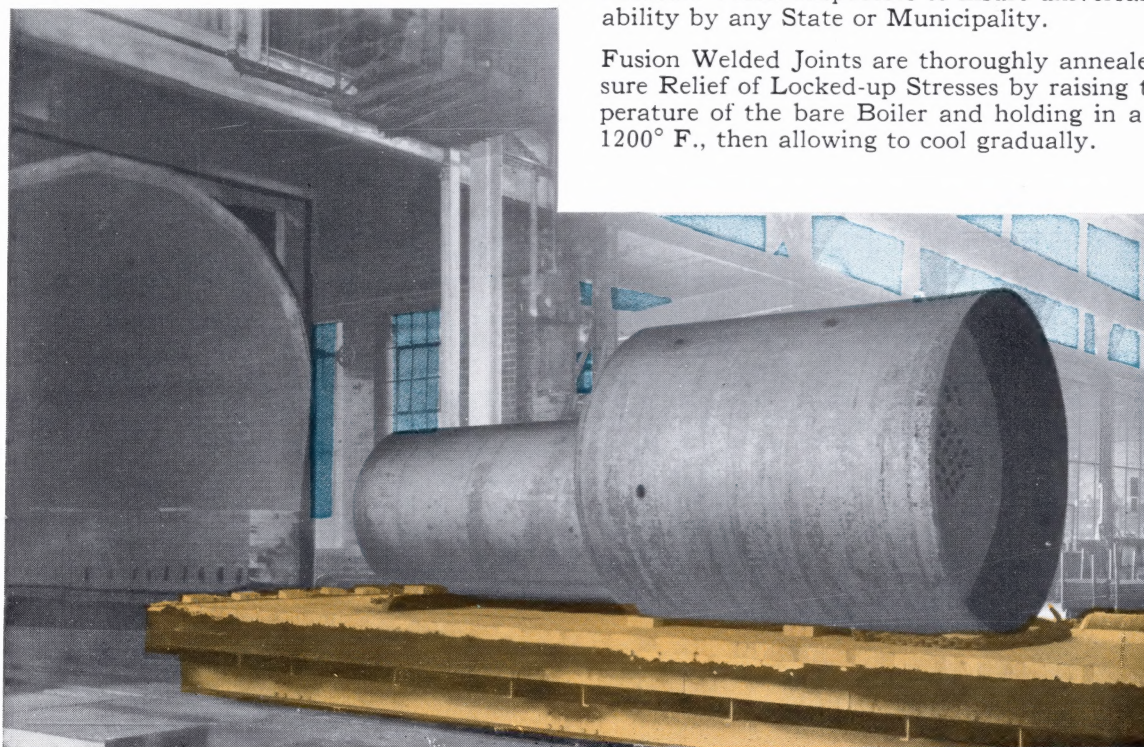
To meet stringent requirements of the A.S.M.E. Code for high pressure power boilers careful selection, preparation and assembly of all plate material is mandatory.

All joints are Fusion Welded by highly trained workmen, X-Ray checked and test-specimen results recorded.

Fusion Welded seams for the heavy flanged heads and tubular shell were adopted after thorough investigation and painstaking development of procedure controlled by code and proved by exograph inspection.

During the course of construction and after completion each boiler is rigidly inspected by a qualified Inspector licensed by the National Board of Boiler and Pressure Vessel Inspectors to insure universal acceptability by any State or Municipality.

Fusion Welded Joints are thoroughly annealed to insure Relief of Locked-up Stresses by raising the temperature of the bare Boiler and holding in a zone of 1200°F. , then allowing to cool gradually.



Our huge modern Recirculating-Type Stress Relieving Furnace, photo above, the only one of its size, insures a uniformity of temperature of less than 10° variance

throughout its entire interior. This procedure is vitally important for absolute dependability, as well as ultimate safety.

KEWANEE HI-TEST *Series HT*

Specifications—

| BOILER NUMBER | HT 50 | HT 60 | HT 75 | HT 100 | HT 125 | HT 150 |
|---|---------|---------|-------|--------|--------|--------|
| RATING, MECHANICALLY-FIRED | | | | | | |
| HORSEPOWER | 60 | 72 | 90 | 120 | 150 | 180 |
| THOUSANDS OF BTU PER HR. | 2010 | 2400 | 3010 | 4020 | 5020 | 6030 |
| POUNDS OF STEAM PER HR. | 2070 | 2470 | 3110 | 4140 | 5180 | 6210 |
| RATING, HAND-FIRED | | | | | | |
| HORSEPOWER | 50 | 60 | 75 | 100 | 125 | 150 |
| THOUSANDS OF BTU PER HR. | 1680 | 2010 | 2510 | 3350 | 4200 | 5020 |
| POUNDS OF STEAM PER HR. | 1730 | 2070 | 2590 | 3450 | 4330 | 5180 |
| HEATING SURFACE | 500 | 600 | 750 | 1000 | 1250 | 1500 |
| GRATE AREA | 18.3 | 20.3 | 22.5 | 27.5 | 30.2 | 35.7 |
| FURNACE VOLUME ABOVE GRATES | 72 | 90 | 105 | 140 | 181 | 213 |
| FURNACE WIDTH | 48 | 48 | 53 | 59 | 65 | 65 |
| LENGTH | 56 | 62 | 62 | 68 | 68 | 80 |
| HEIGHT ABOVE GRATES | 40 | 46 | 46 | 50 | 60 | 60 |
| CYLINDER DIAMETER, FRONT | 42 | 42 | 42 | 48 | 54 | 54 |
| REAR | 66 | 66 | 72 | 78 | 84 | 84 |
| BOILER LENGTH OVERALL | 12-5 | 13-5 | 14-3 | 15-5 | 16-2 | 18-6 |
| BOILER HEIGHT, FLOOR TO TOP OF SHELL | 107 | 113 | 116 | 126 | 142 | 142 |
| WATER LINE HEIGHT | 95 | 101 | 104 | 111 | 124 | 124 |
| *STEAM SUPPLY SIZE | 4 | 4 | 4 | 5 | 6 | 6 |
| BLOW-OFF SIZE | 2 | 2 | 2 | 2 | 2 1/2 | 2 1/2 |
| FEED WATER SIZE | 1 1/4 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 | 1 1/2 |
| INJECTOR SUPPLY SIZE | 1 | 1 | 1 1/4 | 1 1/4 | 1 1/2 | 1 1/2 |
| SAFETY VALVE BOILER OPENINGS NO.—SIZE—125 LB. | 2-2 1/2 | 2-2 1/2 | 2-3 | 2-3 | 2-3 | 2-3 |
| VERIFY ALL SIZES —150 LB. | 2-2 1/2 | 2-2 1/2 | 2-3 | 2-3 | 2-3 | 2-3 |
| BREECHING DIAMETER | 24 | 26 | 29 | 31 | 33 | 36 |
| STACK DIAMETER | 22 | 24 | 27 | 29 | 31 | 34 |
| STACK HEIGHT—HAND FIRED | 55 | 60 | 65 | 70 | 75 | 80 |
| STACK HEIGHT—MECHANICALLY FIRED | 45 | 50 | 55 | 60 | 65 | 70 |
| BREECHING DIAMETER, TWO BOILERS | 31 | 34 | 38 | 41 | 44 | 48 |
| STACK DIAMETER, TWO BOILERS | 29 | 32 | 36 | 38 | 41 | 45 |
| STACK HEIGHT, TWO BOILERS, HAND FIRED | 65 | 70 | 75 | 80 | 85 | 90 |
| STACK HEIGHT, TWO BOILERS, MECHANICALLY FIRED | 55 | 60 | 65 | 70 | 75 | 80 |
| ***FIREBRICK ABOVE BASE LINE | 1300 | 1450 | 1700 | 2750 | 3250 | 3500 |
| ***COMMON BRICK IN BASE AND PIER | 800 | 850 | 1100 | 1450 | 1500 | 1550 |
| ***2 IN. INSULATION LINING IN FURNACE | 130 | 155 | 165 | 205 | 235 | 260 |
| OUTSIDE SURFACE TO COVER | 115 | 145 | 165 | 200 | 250 | 300 |
| APPROX. SHIPPING WEIGHT | | | | | | |
| BOILER, HAND-FIRED, 125 LB. | 13660 | 15380 | 18870 | 22920 | 26720 | 30200 |
| 150 LB. | 13760 | 15580 | 19270 | 23420 | 27420 | 30900 |
| MECHANICALLY-FIRED, 125 LB. | 12470 | 14080 | 17405 | 21070 | 24630 | 28000 |
| 150 LB. | 12570 | 14280 | 17805 | 21570 | 25330 | 28700 |
| *CODE WORD, STEAM BOILER—125 LB. W. P. | HTETF | HTETG | HTETH | HTETI | HTETJ | HTETK |
| —150 LB. W. P. | HTEFF | HTEFG | HTEFH | HTEFI | HTEFJ | HTEFK |

To obtain the rating in sq. ft. of Steam Radiation multiply the Heating Surface by 14 for hand-firing and by 17 for mechanical-firing, or multiply the Horsepower by 140.

***No Brickwork, Furnace Refractory or Insulation included.

**For Oil, Gas or Stoker, add word to code; example—ship one HTETF OIL.

*Flanged Steel, Nozzle ASA 300 lb. (extra heavy drilling).

Steam supply, blow-off and safety valve sizes given are openings regularly found on boilers in stock.

EQUIPMENT—Standard—For Coal, Oil, Gas and Stoker—Boiler shell with Damper in Outlet; Flue Gas Chambers—Rear with insulation Lining, insulated Doors and Frames; Front with insulated Doors and Frame; Rear and Center Saddles; Fire Doors and Frames, Steel Casing extending to top of masonry base. Coal Hand Fired—Base Front with Ash Doors; Dead Plate; Stationary Grates.

Oil, Gas, Stoker Fired—No Base Front furnished. Prices on Special Base Fronts at extra cost.

FIRE TOOLS for Coal, Hand Fired—Hoe, Poker, Slice Bar, Flue Cleaners with handles.

For Oil, Gas, Stoker—Flue Cleaners with handles only.

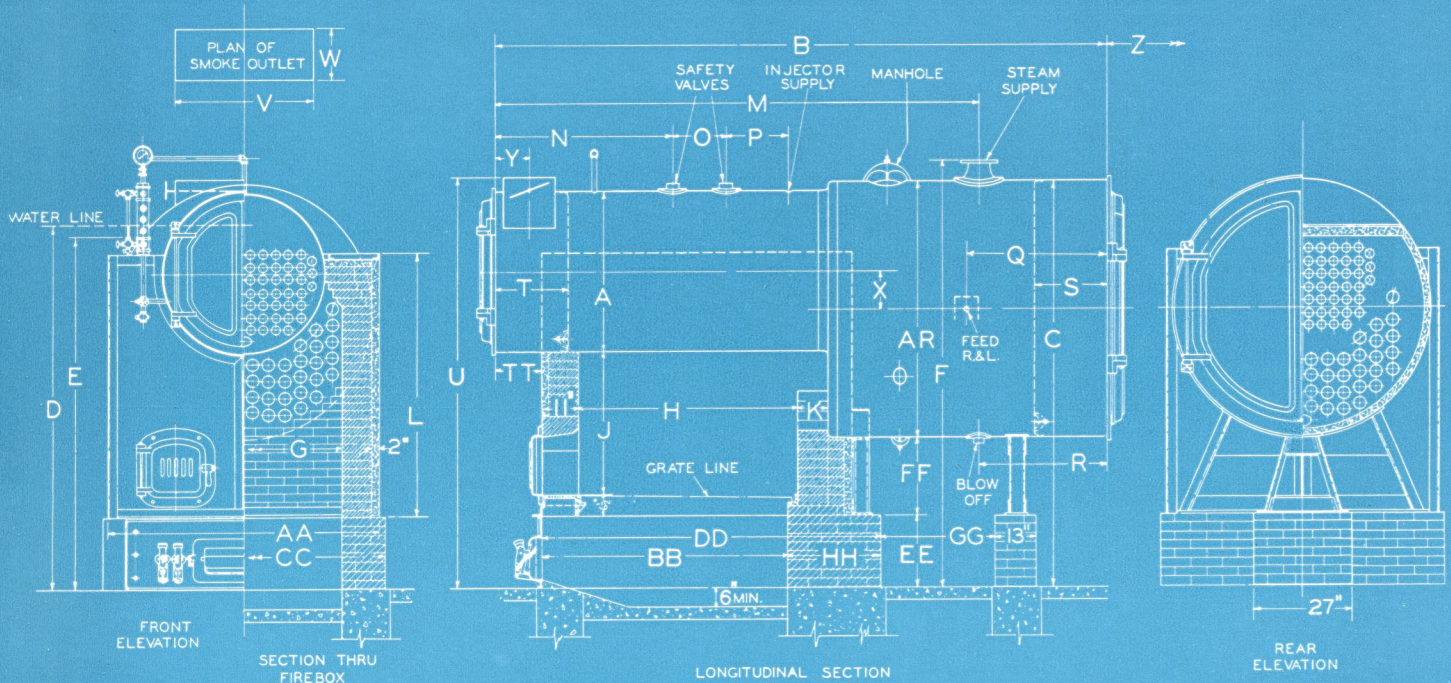
***No Brickwork, Furnace Refractory or Insulation included.

TRIMMINGS— for Coal, Stoker, Oil, Gas—Steam Gauge with Syphon and Cock; extra heavy cast iron Water Column with Water Gauge and Gauge Cocks, Compression Try Cocks; Safety Valves as required by A.S.M.E. Code; Blow-off Valve and Cock; Globe and Check Valve for feed pipe.

No other accessories or piping.

Special trimmings furnished at additional cost.

Two-Pass Portable Tubular Boiler for High Pressure Steam

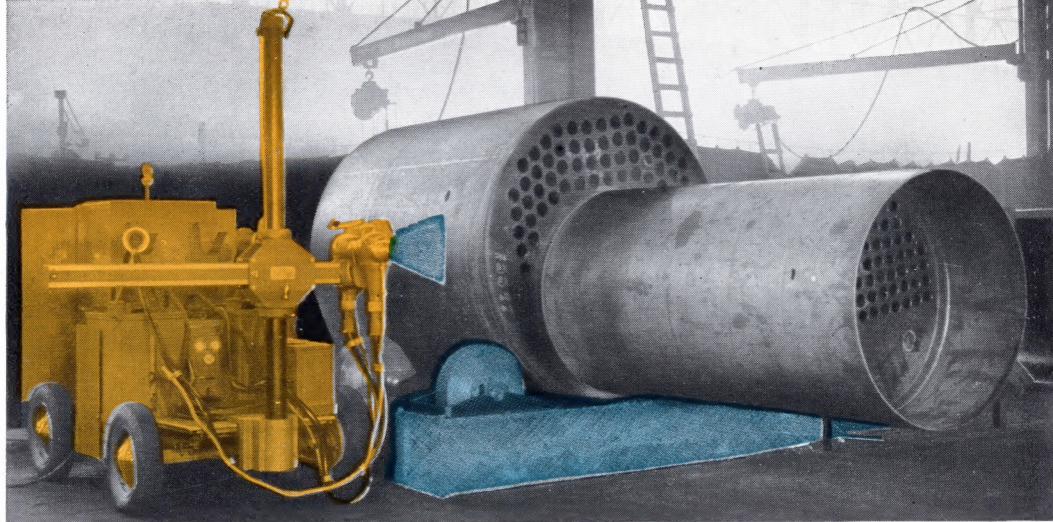


Setting Measurements—

NOTE: NO BRICKWORK, FURNACE REFRACTORY OR INSULATION INCLUDED

| BOILER NUMBER..... | HT 50 | HT 60 | HT 75 | HT 100 | HT 125 | HT 150 |
|--|-------|-------|-------|--------|--------|--------|
| A—CYLINDER DIAMETER, FRONT.....IN. | 42 | 42 | 42 | 48 | 54 | 54 |
| AR—CYLINDER DIAMETER, REAR.....IN. | 66 | 66 | 72 | 78 | 84 | 84 |
| B—BOILER LENGTH.....FT. IN. | 12-5 | 13-5 | 14-3 | 15-5 | 16-2 | 18-6 |
| C—BOILER HEIGHT.....IN. | 107 | 113 | 116 | 126 | 142 | 142 |
| D—WATER LINE HEIGHT.....IN. | 95 | 101 | 104 | 111 | 124 | 124 |
| E—WATER COLUMN HEIGHT.....IN. | 93 | 99 | 102 | 109 | 122 | 122 |
| F—STEAM NOZZLE HEIGHT.....IN. | 113 | 119 | 122 | 132 | 149 | 149 |
| X—CYLINDERS—CENTER TO CENTER.....IN. | 8½ | 8½ | 11¾ | 11¾ | 11¾ | 11¾ |
| G—FURNACE WIDTH.....IN. | 48 | 48 | 53 | 59 | 65 | 65 |
| H—FURNACE LENGTH.....IN. | 56 | 62 | 62 | 68 | 68 | 80 |
| J—FURNACE HEIGHT ABOVE GRATES.....IN. | 40 | 46 | 46 | 50 | 60 | 60 |
| K—BRIDGEWALL WIDTH.....IN. | 4½ | 4½ | 9 | 9 | 9 | 9 |
| L—FURNACE CASING HEIGHT ABOVE BASE.....IN. | 71 | 77 | 79 | 87 | 100 | 100 |
| M—STEAM SUPPLY LOCATION.....IN. | 121 | 128 | 135 | 146 | 149 | 177 |
| N—SAFETY VALVE LOCATION.....IN. | 53 | 54 | 54 | 54 | 60 | 63 |
| O—SAFETY VALVE LOCATION.....IN. | 10 | 14 | 16 | 16 | 16 | 16 |
| P—INJECTOR STEAM SUPPLY LOCATION.....IN. | 10 | 11 | 13 | 20 | 17 | 26 |
| Q—FEED WATER LOCATION.....IN. | 34 | 39 | 42 | 43 | 45 | 45 |
| R—BLOW-OFF LOCATION.....IN. | 32 | 32 | 32 | 34 | 36 | 36 |
| S—REAR FLUE GAS CHAMBER DEPTH.....IN. | 20 | 20 | 20 | 22 | 24 | 24 |
| T—FRONT FLUE GAS CHAMBER DEPTH.....IN. | 20 | 20 | 20 | 22 | 24 | 24 |
| TT—SHELL EXTENSION BEYOND CASING.....IN. | 10 | 10 | 10 | 12 | 14 | 15 |
| U—BREECHING CONNECTION, HEIGHT.....IN. | 108 | 114 | 117 | 127 | 143 | 143 |
| V—LENGTH.....IN. | 36 | 36 | 36 | 42 | 46 | 46 |
| W—WIDTH.....IN. | 14 | 14 | 14 | 16 | 18 | 18 |
| Y—LOCATION.....IN. | 9 | 9 | 9 | 10 | 11 | 11 |
| Z—REAR FLUE DOOR CLEARANCE.....IN. | 36 | 36 | 39 | 42 | 45 | 45 |
| AA—FURNACE CASING WIDTH, INSIDE.....IN. | 70 | 70 | 75 | 90 | 96 | 96 |
| BB—LENGTH.....IN. | 64 | 70 | 70 | 76 | 76 | 88 |
| CC—BASE, WIDTH.....IN. | 78 | 78 | 83 | 98 | 104 | 104 |
| DD—LENGTH.....IN. | 90 | 96 | 101 | 107 | 107 | 119 |
| EE—HEIGHT.....IN. | 15 | 15 | 18 | 18 | 18 | 18 |
| FF—SADDLE HEIGHT FRONT AND REAR.....IN. | 26 | 32 | 26 | 30 | 40 | 40 |
| GG—REAR BRICK PIER LOCATION.....IN. | 24 | 32 | 36 | 40 | 42 | 57 |
| HH—BASE REAR WALL THICKNESS.....IN. | 26 | 26 | 31 | 31 | 31 | 31 |

X-Ray Inspection of Fusion-Welded Seams on Hi-Test Boiler Shell by Radiographic Unit mounted on running gear.



Tests

X-RAY-RADIOGRAPH ANALYSIS:

All seams subject to bursting stresses are radiographed on films which are filed for permanent record and future reference.

By careful study of these films the inspector is aided in determining the soundness of the weld.

As a further check up on thoroughness of workmanship and physical properties the inspector subjects the test specimens to Tensile, Bend and Specific Gravity or Density tests.

HYDROSTATIC TEST:

The finished product is subjected to a Hydrostatic Test Pressure EQUAL to one and one-half times its Maximum allowable Working Pressure in accordance with the A.S.M.E. Code requirements.

Each boiler is inspected during the course of construction and tested by a qualified inspector of a recognized steam boiler inspection and insurance company.

Design

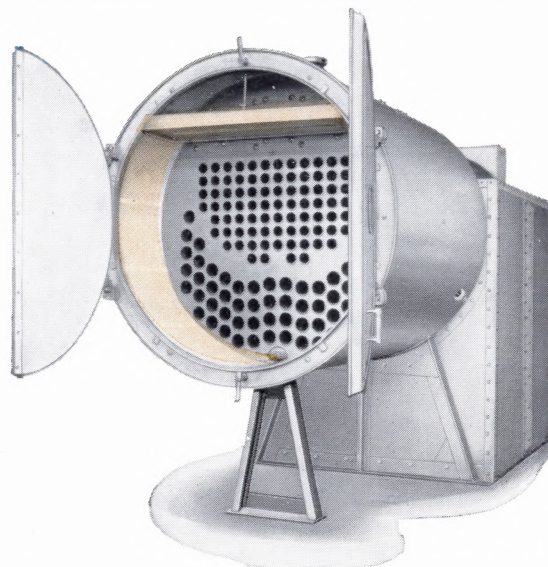
The simplest possible shapes are used. Two cylindrical shells of different diameters are joined with tube heads by Fusion Welding, only a few diagonal head braces are needed. Front and rear flue gas chambers are an integral part of the boiler shell, eliminating joints.

PLATE —

Shells and heads are fabricated from firebox and flange steel, 55,000 to 65,000 pounds per square inch tensile strength. Internal stresses are taken up without excess weight due to the cylindrical shape with no stay bolts or cross braces.

TUBES —

This new HI-TEST BOILER has High Quality Seamless Steel Tubes as standard equipment 4" direct and 3" return. The tube layout provides for free unrestricted water circulation sweeping steam bubbles from the heat transmitting surface so a steady water line is maintained.



All tubes can be cleaned or removed from either the front or rear of the boiler.

Conservative Rating

In accord with accepted standards ten square feet of heating surface constitute one boiler horsepower.

Heating surface, furnace volume, water content; Steam space, disengaging or liberating area all basic fundamentals, have been incorporated in technically correct ratio for good boiler design.

Kewanee experience evolved through seventy-two years of research in steam generation predetermines the exact location of the steam nozzle which assures delivery of steam not less than 97% quality at high overloads without the necessity of dry pipes or baffles

KEWANEE HI-TEST *Series HT*

Furnace—

The available furnace volume is large, and proportionate to efficient combustion requirements.

The heavy casing of reinforced steel panels is easily erected, and accommodates any commercial insulation as well as refractory fire brick lining. This design insures permanence, reduces radiant heat losses to a minimum, and eliminates infiltration. More uniformly effective furnace temperatures are maintained and high overall Combustion Efficiency is developed with lower operating and maintenance costs. Factors very important to all Power Plant Operators.

The Rear Flue Gas Chamber diverting burned gases of combustion out of the direct tubes into the return tubes is thoroughly well protected against radiant heat losses by means of high temperature-resistant factory-formed liners and insulated flue doors.

ACCESSIBILITY for Cleaning and Inspection — Ample cleanout handholes and manhole opening provided for easy periodic internal cleaning and inspection.

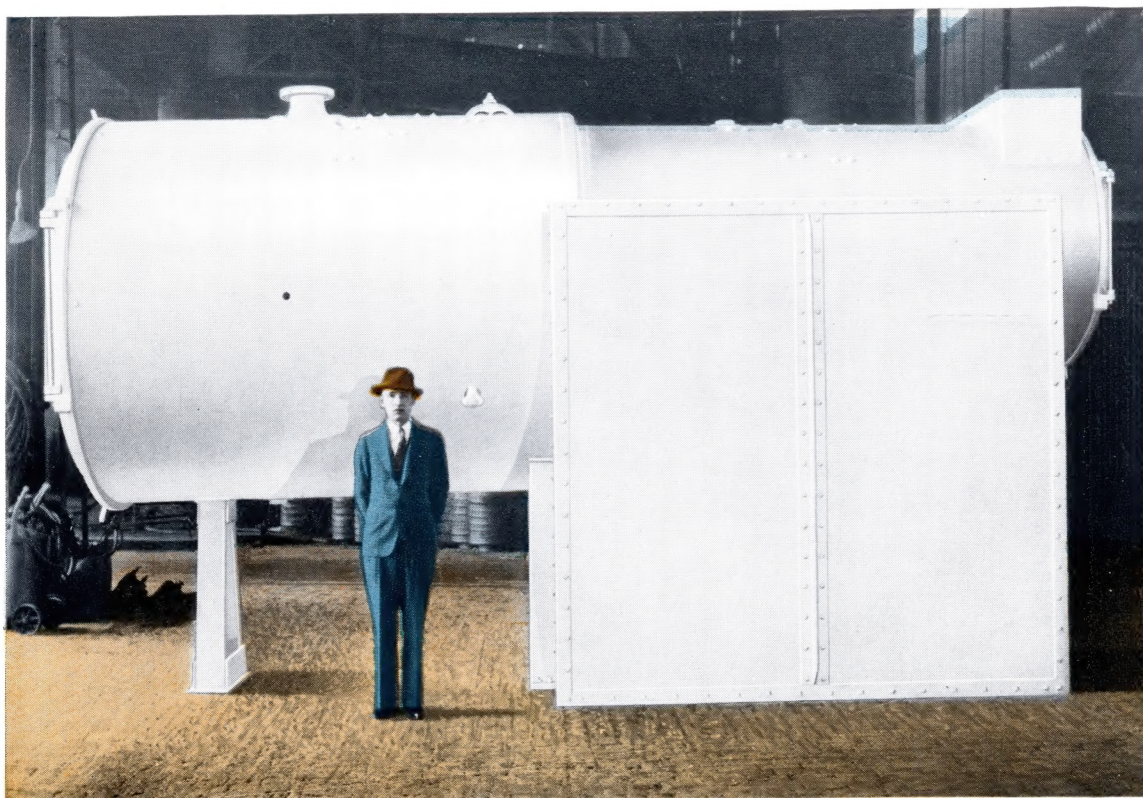
tion. Handholes in front and rear heads are large enough to permit removing tubes through them.

CASTINGS—The flue door, fire door and base front assemblies are cast in extra strong fine grained quality iron to withstand the hard usage demanded in daily service. Surfaces between doors and frames are machine ground to a gastight fit, *and all castings controlling the doors are adjustable.*

DOORS Exposed to Temperatures are Heavily Insulated with material manufactured specially to meet KEWANEE specifications.

The salient features outlined in this presentation prove the KEWANEE HI-TEST BOILER to be one of the most outstandingly modern of its type.

It is ready to serve every commercial or private demand likely to arise in Industrial Plants, Laundries, Hospitals, Hotels, Creameries, Dairies, Food Product and Meat Packing Plants, Canneries, Chemical Plants, Railroad Shops, etc.



Our Hi-Test welded line ships from the Kewanee factory expertly packed for quick assembly and setting on the masonry base all ready for the refractory lining of the Firebox casing.

With brickwork reduced to a minimum these units are readily transferable at nominal cost for reinstallation should the necessity arise.

KEWANEE HI-TEST BOILER

CATALOG No. 89

KEWANEE-ROSS CORPORATION

DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

KEWANEE, ILLINOIS